

### REMARKS

Applicant appreciates the thorough examination of the present application that is reflected in the Official Action of April 26, 2004. Applicant also appreciates the Examiner's indication that Claims 14-19, 23-25, and 36-41 are allowed, and that Claims 6-8, 13, 31-33, and 47 are objected to but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6, 13, 31, and 47 have been amended into independent form including all of the recitations of the base claim and any intervening claims. Applicant respectfully submits that, in light of the present amendments, Claims 6-8, 13-19, 23-25, 31-33, 36-41, and 47 are now allowable.

Accordingly, only Claims 1-5, 9-12, 26-30, 34-35, 42-46, and 48-51 remain rejected. Applicant respectfully submits that all of the pending claims are patentable for the reasons that will now be described herein.

#### The Objections to Claims 11 and 12

Claims 11 and 12 have been amended to replace "comprises" with "comprise". Applicant requests withdrawal of the objections based on these amendments.

#### Claims 1, 26, and 42 Are Patentable Over Smee et al.

Independent Claim 1 and analogous independent Claims 26 and 42 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,522,683 to Smee et al. ("Smee").

Claim 1 recites (emphasis added):

1. A method of decoding quantized and unquantized wanted data symbols from received signal samples, comprising:

**processing a group of currently received signal samples** to determine a corresponding current set of unquantized wanted data symbols and an interfering waveform representative of a sum of other unwanted data symbols by subtracting an amount of a **previously decoded set of quantized wanted symbols** and a previously determined interfering waveform; and

**quantizing said determined current set of unquantized wanted symbols** to obtain corresponding quantized symbols.

An embodiment of the highlighted recitations of Claim 1 is discussed in the specification at page 12 with reference to FIG. 2, shown below, as follows:

At the subtract block 24, the above equations are used to subtract the influence of an earlier-determined symbol  $S_i$  and an earlier-determined interference waveform value  $W_i$ . In a quantize block 26, the signal, with the influence of earlier symbols and interference now subtracted is separated into a quantized symbol  $S_{i+1}$  and a new waveform point  $W_{i+1}$ . ... The determined  $S_{i+1}$  and  $W_{i+1}$  values are then fed back (decision feedback) via a delay block 28 to the subtract block 24 to subtract their influence on the next two signal samples to be decoded, and the stream  $S_i, S_{i+1}$  is output.

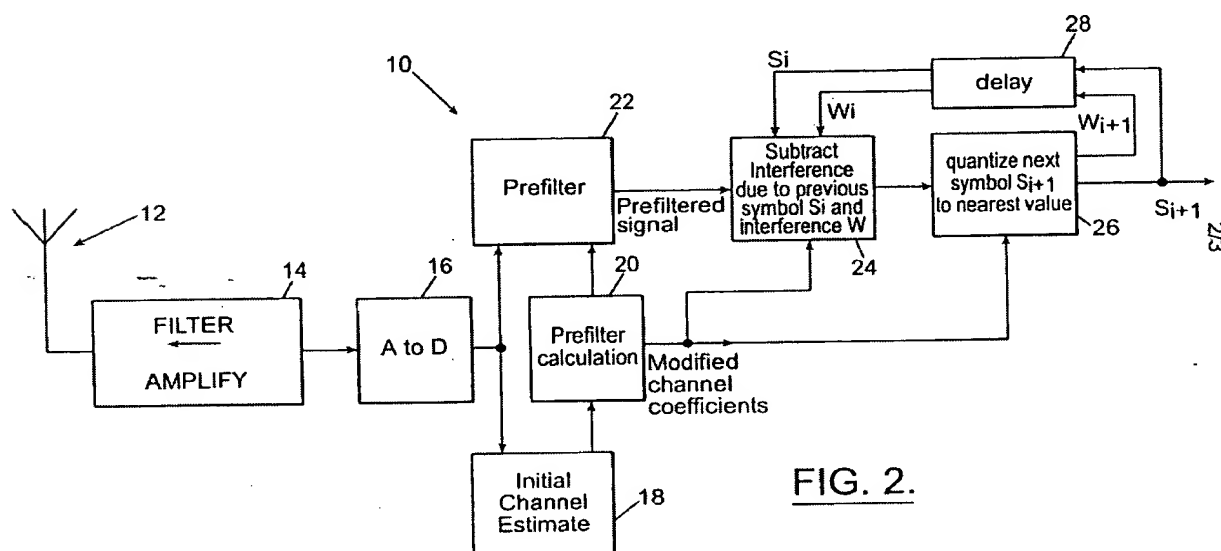


FIG. 2.

Accordingly, as recited in Claim 1, and as explained in the specification with regard to FIG. 2, a previously decoded set of quantized wanted signals and a previously determined interfering waveform are subtracted from a group of currently received signal samples to determine a current set of unquantized wanted data symbols, and the determined current set of unquantized wanted data symbols are then quantized to obtain quantized symbols.

The Office Action concedes that Smee "does not show clearly the decoder to decode the set of quantized wanted symbols." (Office Action, Page 3). However, Applicant respectfully submits that Smee fails to disclose or suggest many more recitations of Claim 1. In particular, Applicant notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. The prior art reference or references when combined must teach or suggest *all* the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the

art, to modify the reference or to combine reference teachings, and there must be a reasonable expectation of success of the combination. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found *in the prior art*, not in applicant's disclosure. See MPEP § 2143. As affirmed by the Court of Appeals for the Federal Circuit, to support combining references in a § 103 rejection, evidence of a suggestion, teaching, or motivation to combine must be *clear and particular*, and this requirement is not met by merely offering broad, conclusory statements about teachings of references. *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). In an even more recent decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000).

In rejecting Claim 1, the Office Actions states on pages 2-3, that Smee at Column 11, lines 39-58, and blocks 304, 326, discloses:

Adaptive chip rate LE (306) to process a group of currently received signal to determine a corresponding current set of wanted data symbols and an interfering waveform of other unwanted symbols by subtracting an amount of a previously (sic) set of wanted symbols via blocks 312, 314, 316, 318, 320, and 322 (column 11, lines 39-58) and a previously determined interfering waveform (blocks 302, 326);

Quantizing the determined current set of wanted symbols to obtain corresponding quantized symbols.

However, Applicant notes that the relied upon portions of Smee appear to be devoid of any such description. In particular, Smee at Column 11, lines 39-58, recites the following:

The 16 parallel outputs of DEMUX data epochs 312 are provided to "N chip Walsh decoder" 314. N chip Walsh decoder 314 uses the same Walsh code sequence (i.e. the same Walsh function) which was used in N chip Walsh cover 218 of system 200 in the transmitter. N chip Walsh decoder 314 in system 300 removes the effects of N chip Walsh cover 218 and chip level summer 224 from the received chip sequences such that the 16 parallel outputs of N chip Walsh decoder 314 are in the form of code symbols.

However, the code symbols at the output of N chip Walsh decoder 314 are merely "soft estimates" of the code symbols corresponding to the actual message signal transmitted by system 200. In other words, no decision has been made to quantize

each of the 16 parallel code symbols at the output of N chip Walsh decoder 314 to an element of symbol constellation. As discussed below, a decision in favor of a certain element of symbol constellation for each of the individual code symbols at the 16 parallel outputs of the N chip Walsh decoder 314 can be made by a device such as "parallel symbol slicers" 318.

(Smee, Col. 11, lines 39-58).

Applicant respectfully submits that the portions of Smee cited by the Office Action, and indeed, no other portion of Smee, discloses or suggests decoding quantized and unquantized wanted data symbols from received signal samples by: (1) processing a group of currently received signal samples to determine a corresponding current set of unquantized wanted data symbols and an interfering waveform representative of a sum of other unwanted data symbols by subtracting an amount of a previously decoded set of quantized wanted symbols and a previously determined interfering waveform; or (2) quantizing said determined current set of unquantized wanted symbols to obtain corresponding quantized symbols.

Accordingly, Applicant respectfully submits that the 35 U.S.C. §103(a) rejection in the Office Action fails to meet the requirements of MPEP § 2143 as there is no clear and particular suggestion, teaching, or motivation as to why one would modify Smee to provide the recitations of Claim 1. Moreover, the Office Action does not provide a motivation within Smee to modify it to subtract a previously decoded set of quantized wanted signals and a previously determined interfering waveform from a group of currently received signal samples to determine a current set of unquantized wanted data symbols, or to quantize a current set of unquantized wanted data symbols determined by such subtraction. It thus appears that the Office Action is using improper hindsight in light of Applicant's disclosure in the pending application to modify Smee. Applicant thus submits that the Office Action fails to provide clear and particular evidence from the art of record of a motivation to modify Smee to produce the recitations of Claim 1.

For at least these reasons, Applicant respectfully submits that Claim 1 is patentable over Smee.

Claims 26 and 42 are analogous to Claim 1 and are patentable for substantially the same reasons that were described above. This analysis will not be repeated here for brevity.

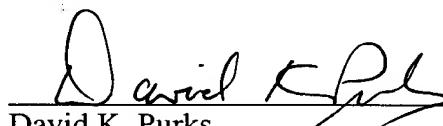
Dependent Claims 2-5, 9-12, 27-30, 34- 35, 43-46, and 48-51 are patentable at least based on the patentability of the independent claims from which they depend as discussed above.

### CONCLUSION

Accordingly, Applicant respectfully requests the withdrawal of all objections and rejections and the allowance of all claims in due course. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is encouraged to contact the undersigned by telephone at (919) 854-1400.

Respectfully submitted,

Dated: July 13, 2004



David K. Purks  
Attorney for Applicant  
Registration No. 40,133

USPTO Customer No. 20792  
Myers Bigel Sibley & Sajovec  
Post Office Box 37428  
Raleigh, North Carolina 27627  
Telephone: 919/854-1400  
Facsimile: 919/854-1401